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REMARKS

Claims 1-19 were pending in the present Application. Claims 1, 10, and 17 have been amended, leaving Claims 1-19 for consideration in the present amendment. Support for the amendment to Claims 1 and 17 can be found in the Examples and in Figure 4. Claim 10 has been amended to correct the spelling of "functionalities" to "finctionalities". No new matter has been entered by way of amendment.

Filed concurrently herewith is a terminal disclaimer of prior U.S. Patent No. 6,147,009 to Grill.

Reconsideration and allowance of all pending claims is respectfully requested in view of the above amendments and the following remarks.

First Claim Rejection Under 35 U.S.C. §102(e)

Claims 1-19 stand rejected under 35 U.S.C. §102(e), as allegedly unpatentable over U.S. Pat. No. 6,147,009 to Grill (hereinafter "Grill"). Applicants respectfully traverse.

Grill is generally directed to the use of hydrogenated oxidized silica carbon films for use as dielectric materials.

To anticipate a claim under 35 U.S.C. §102, a single source must contain all of the elements of the claim. *Lewmar Marine Inc. v. Barient, Inc.*, 827 F.2d 744, 747, 3 U.S.P.Q.2d 1766, 1768 (Fed. Cir. 1987), *cert. denied*, 484 U.S. 1007 (1988). Moreover, In order to support an anticipation rejection based on inherency, an Examiner must provide factual and technical grounds establishing that the inherent feature necessarily flows from the teachings of the prior art. *Ex parte Levy*, 17 U.S.P.Q.2d 1461, 1464 (Bd. Pat. App. & Int. 1990); *In re Oelrich*, 666 F.2d 578, 581, 212 U.S.P.Q. 323, 326 (C.C.P.A. 1981) (holding that inherency must flow as a necessary conclusion from the prior art, not simply a possible one).

Grill fails to disclose processes for depositing a low k dielectric film on a substrate comprising, *inter alia*, flowing a precursor gas containing Si, C, H and an oxygen-providing gas into a PECVD chamber containing a substrate, wherein the precursor gas and the oxygen-providing gas are substantially free of nitrogen. Applicants have discovered that the use of nitrogen containing precursors causes problems during subsequent photolithography steps. In contrast, Grill discloses that the precursor gases may contain nitrogen (see Grill, Col. 3, ll. 28-30). Moreover, it is submitted that Grill fails to disclose the use of oxygen precursor gases apart from oxygen. As such, Grill fails to disclose other oxygen gas precursors such as water, carbon dioxide, carbon monoxide, and combinations thereof as claimed by Applicants.

Since Grill fails to teach at least one element of Applicant' claims, the rejection is improper and requested to be withdrawn.

Second Claim Rejection Under 35 U.S.C. §102(e)

Claims 1-5 and 7-19 stand rejected under 35 U.S.C. §102(e), as allegedly unpatentable over U.S. Pat. No. 6,159,871 to Loboda et al. (hereinafter "Loboda").

Loboda is generally directed to hydrogenated silicon oxycarbide films. The films are produced from a reactive gas mixture comprising a methyl containing silane and an oxygen providing gas. Suitable oxygen containing gases include air, ozone, oxygen, nitrous oxide and nitric oxide. As described by Loboda, the oxygen providing gas is preferably nitrous oxide (see Loboda, Col. 3, ll. 1-3). An advantage when using nitrous oxide as the oxygen providing gas is that the film composition and properties remain essentially the same even when the amount of nitrous oxide in the reactive gas mixture is significantly varied.

Like Grill noted above, Loboda also fails to disclose processes for depositing a low k dielectric film on a substrate comprising, *inter alia*, flowing a precursor gas containing Si, C, H and an oxygen-providing gas into a PECVD chamber containing a substrate, wherein the precursor gas and the oxygen-providing gas are substantially free of nitrogen.

Each one of Examples 1-9 disclosed in Laboda employ nitrous oxide as the oxygen providing gas to form the hydrogenated silicon oxycarbide film. Although Comparative Examples 1-2 disclose the use of oxygen, it is noted by Laboda that SiO_2 films are formed. Nevertheless, Loboda fails to disclose that the precursor gas is free of nitrogen containing species as claimed by Applicants. Moreover, there is no disclosure of carbon monoxide and carbon dioxide as suitable oxygen providing gases.

For at least these reasons, the rejection is requested to be withdrawn.

Third Claim Rejection Under 35 U.S.C. §102(e)

Claims 1-5 and 7-19 stand rejected under 35 U.S.C. §102(e), as allegedly unpatentable over U.S. Pat. No. 6,610,362 to Towle et al. (hereinafter "Towle"). Applicants respectfully traverse.

Towle is generally directed to depositing a film containing carbon, silicon, boron, and oxygen.

Towle fails to disclose depositing a film consisting essentially of Si, C, O and H. Rather, Towle discloses boron doped silicon dioxide glasses. For at least this reason, the rejection of Claims 1-5 and 7-19 is requested to be withdrawn.

First Claim Rejection under 35 U.S.C. §103(a)

Claims 4 and 12 stand rejected as unpatentable under 35 U.S.C. §103(a) over Towle as applied to Claim 1 above, and further in view of Loboda. Applicants respectfully traverse.

Towle and Loboda are discussed above.

Claims 4 and 12 are directed to a method of depositing a low k dielectric film on a substrate, the method comprising flowing a precursor gas containing Si, C, H and an oxygen-providing gas into a PECVD chamber containing a substrate, wherein the precursor gas and the oxygen-providing gas are substantially free of nitrogen, and wherein

the oxygen-providing gas is selected from the group consisting of oxygen, carbon monoxide, carbon dioxide, ozone, water vapor and a combination comprising at least one of the foregoing; and depositing a hydrogenated oxidized silicon carbon film consisting essentially of Si, C, O and H on the substrate.

For an obviousness rejection to be proper, the Examiner must meet the burden of establishing a *prima facie* case of obviousness, i.e., that all elements of the invention are disclosed in the prior art; that the prior art relied upon, coupled with knowledge generally available in the art at the time of the invention, contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or combined references; and that the proposed modification of the prior art had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was made. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); *In Re Wilson*, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970); *Amgen v. Chugai Pharmaceuticals Co.*, 927 U.S.P.Q.2d, 1016, 1023 (Fed. Cir. 1996).

Applicants respectfully assert that a prima facie case of obviousness has not been established against Claims 4 and 12. A prima facie case has not been established because none of the cited references teach or suggest the use of nitrogen free precursor gases for depositing a film consisting essentially Si, C, O, and H.

In Towle, a boron doped silicon dioxide gas is deposited. Lobodo suggests the use of nitrous oxide as the oxygen providing gas. A combination of the cited references would produce a boron doped silicon dioxide glass containing amine functionalities. As noted by the Applicants, the use of nitrogen containing gases in the precursor and/or oxygen providing gases deleteriously affects subsequent photolithography steps. Thus, combining Towle with Lobodo would provide no reasonable expectation of success.

As all elements of independent Claims 4 and 12 have not been taught or suggested, these claims are patentable over the cited references, individually or in combination.

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Second Claim Rejection Under 35 U.S.C. § 103(a)

Claim 6 stands rejected under 35 USC 103(a) over Towle as applied to Claim 1 above, and further in view of U.S. Pat. No. 5,028,566 to Lagendjik (hereinafter "Lagendjik"). Applicants respectfully traverse.

Towle is discussed above.

Lagendjik is generally directed to deposition of silicon dioxide films by oxidative decomposition of organosiloxanes.

Applicants respectfully assert that a prima facie case of obviousness has not been established against Claim 6. The cited references, individually or in combination, fail to teach or suggest the use of nitrogen free precursor gases for depositing a film consisting essentially Si, C, O, and H.

In Towle, a boron doped silicon dioxide film is deposited. In Lagendjik, silicon dioxide films are formed, which is markedly different from hydrogenated oxidized silicon carbon films. Thus, the combination, if made, would still fail to establish a prima facie case of obviousness.

For at least this reasons, Claim 6 is patentably distinguished over the cited references. Withdrawal of the rejection is hereby requested.

Double Patenting Rejection

Claims 1-19 are rejected under the judicially created doctrine of obviousness-type double patenting over Claims 1, 4, 6, and 7 of U.S. Patent No. 6,147,009 to Grill.

Filed concurrently herewith is a terminal disclaimer, thereby rendering the rejection moot.

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It is believed that the foregoing amendments and remarks fully comply with the Office Action and that the claims herein should now be allowable to Applicants. Accordingly, reconsideration and allowance is requested.

If there are any additional charges with respect to this Amendment or otherwise, please charge them to Deposit Account No. 09-0458 maintained by Applicants' attorneys.

Respectfully submitted,

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